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CLAIMS 1-53. (CANCELLED)

CLAIMS 54-110. (CANCELLED)

111. (New) A semiconductor structure comprising:
a substrate including an insulator layer; and
a device layer disposed over the insulator layer, the device layer comprising at least one of strained Si, strained $\text{Si}_{1-w}\text{Ge}_w$, strained Ge, GaAs, AlAs, ZnSe, and InGaP.

112. (New) The structure of claim 111 wherein a surface of the structure has a root mean square surface roughness of less than about 11 nanometers.

113. (New) The structure of claim 111, further comprising:
a device integrated into at least a portion of the device layer.

114. (New) The semiconductor structure of claim 111, wherein the substrate comprises silicon.

115. (New) A semiconductor structure comprising:
a substrate comprising silicon;
an insulating layer disposed over the substrate; and
a relaxed $\text{Si}_{1-y}\text{Ge}_y$ layer disposed over the insulating layer.

CLAIM 116. (CANCELLED)

Application/Control Number: 10/802,185

117. (New) The structure of claim 116 wherein the Ge concentration y has a value of 1.

118. (New) The structure of claim 115, further comprising:
a device disposed within at least a portion of the relaxed $\text{Si}_{1-y}\text{Ge}_y$ layer.